

RESPONSE AND REQUEST FOR RECONSIDERATION

In response to the Office Action of September 29, 2010, Applicants hereby requests a three-month time extension, files an RCE request, and requests the Examiner to reconsider the claims in view of the present remarks. Applicant also notes that Applicant has been trying to schedule a telephone interview with the Examiner to discuss some video supplied on CDs to the Examiner showing the differences in viscosity and handling between the inventive composition and the composition of the Forsberg (US 4,094,801) reference. Applicant hopes to have that telephone interview before the Examiner responds to this Response to e Office Action of September 29, 2010.

The Examiner in the Office Action of September 29, 2010 notes that claims 1-3, 5-8, and 11-22 are pending. Claims 1-3, 5-8, 11-16, and 18-20 are rejected. Claims 17, 21, and 22 are withdrawn from consideration as they are seen to represent other (independent and distinct) inventions that had not been originally claimed.

Novelty Rejection

The Examiner has not raised a 35 U.S.C. §102(b) rejection to claims 1-3, 5-8, 11-16, and 18-20. Accordingly, it is submitted that all claims under consideration are considered novel.

Obviousness Rejection

The Examiner has raised a 35 U.S.C. §103(a) rejections to claims 1-3, 5-8, 11-16, and 18-20 over Forsberg (US 4,094,801) in view of Rothon (US 5,461,101), in view Basic (GB1 061 161) and further in view of Magyar (US 5,851,961) and as evidence by Richards (US 2004/0260013).

The Examiner is of the position that Forsberg discloses additives for lubricants and fuels that consist of magnesium-containing liquid dispersion composition. The Examiner noted that Forsberg does not teach:

- (a) a mean particle size ranging from 15 nanometres to about 1 micrometre; nor
- (b) the organic medium containing less than about 2 wt. % of water; nor
- (c) the dispersion having a solid content from about 15 wt. % to about 84 wt. %; nor

(d) grinding the slurry.

The Examiner indicated that Richards, Rothon, Basic and Magyar appear to disclose the added technical features. The Applicant respectfully traverses the rejection in that one skilled in the art would not combine the references cited as suggested by the Examiner to result in the presently claimed invention.

Applicant believes the features of its invention, that were not previously available to the public, includes; a) high concentrations (>51 wt. % when the metal base is metal hydroxide and >35 wt.% when the metal based is other than metal hydroxide) of metal base; b) dispersed as particles with a mean particle size of 15 nanometers to about 1 micrometer; c) in an organic media with less than 2 wt.% water in the present; d) including a surfactant with an HLB of about 2 to 16; and e) resulting in viscosities at 40°C and 100 s^{-1} of 0.003 Pa s to 5 Pa s with the specified equipment. None of the references discloses all of the features, but the Examiner alleges one skilled in the art would logically be motivated to combine the teachings of two or more references to achieve the claimed combinations.

Forsberg discloses compositions that are magnesium-containing complexes prepared by heating a mixture of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, or a magnesium alkoxide with other surface active components to form liquids or solids useful in lubricants and fuels (see Abstract of Invention). Forsberg compositions typically contain water (typically significant amounts ranging from 2.73 wt. % to 39.37 wt. %), and compositions that have 8 wt. % to 37.63 wt. % solids. Applicant believes one skilled in the art would not use the teachings of Forsberg because; a) the metal base content in Forsberg is too low; b) the presence of water further complicates the chemistry involved and converts metal oxides to metal hydroxides, hydrates, or complexes; and c) the viscosity of Forsberg compositions are too high to reasonably expect to get low viscosity liquid compositions with high percentages of metal base in the organic media. The Declaration and the video were presented to show that one skilled in the art would not expect the Forsberg compositions to be convertible to high solids, low viscosity, small particle size dispersions.

Patents such as Forsberg's patent where metal oxides, hydroxides, etc., are reacted in the presence of large amounts of water to form metal complexes (often gels) are competing technology with the Basic patent (GB 1,061,161) which involves grinding metal oxides and hydroxides to smaller sizes and dispersing the same. Applicant submitted a Declaration in the prosecution of the current application showing that at least one example of the Forsberg patent resulted in significantly different (higher) viscosity characteristics than the current application examples. As a result of the gelled nature or solid nature of the products of Forsberg, the viscosity of the products will be greater than the claimed viscosity of 0.003 Pa s to about 5 Pa s of the current claims (noting Forsberg is even at lower metal base solid contents which made Forsberg's viscosities lower).

The Examiner uses the Richards (US 2004/0260013A1) for its teachings that viscosities of less than 5.68 Pas at shear rates from 38-2392 s⁻¹ using TA instruments Rheometer with cone and plate geometry are known for pigment dispersions with effective dispersants. Applicant is not arguing that viscosities of 0.003 to 5 Pa s are novel per se, but rather that viscosities of 0.003 to 5 Pa s are not known in the prior art for dispersions of the specific metal bases in an organic media (Richards was dealing with dispersants for pigments for coatings or inks). Richards teaches similar viscosities for dispersions of Raven 5000 carbon black (not magnesium complexes) in water (rather than specific metal bases in organic media).

Basic teaches dispersions of metal containing compounds in organic distillate fuel oil. On page 1, lines 61-64, the authors of Basic explain that heavily loaded slurries lose fluid properties even when prepared by grinding using ball mills in the prior art. Basic teaches that adding a dispersing agent of an oil-compatible carboxylic acid or carboxylic acid salt makes higher loaded dispersions pumpable (page 1, lines 65-85). Basic on page 2, lines 66-78, teaches solids contents up to 85% can be achieved while the fluid is still pumpable. Basic on page 2, lines 79-95, teaches typical particle sizes are between 2 to 10 microns, preferably 2 to 4 microns. Applicant's claims have an upper limit of 1 micron (i.e., micrometer). Basic on page 2, lines 96-121, teaches that more dispersant is needed per unit weight as the particles size of the material is reduced. For example, while 84

percent solids was achieved with 0.76 percent by weight dispersant, dispersant concentrations beyond about 15 percent by weight are reported to provide little gain in fluidity and are usually not economically justified.

Rothon is directed to particulate magnesium hydroxide suitable for use as a flame retardant additive for a polymer which has a specific high BET surface area and a low particles size (e.g., D₅₀ of 0.3 to 1.0 micron). The particular magnesium hydroxide is made by hydrating the material in the absence of added catalyst to get the required surface area, and wet milling or drying the material and then dry milling the magnesium hydroxide hydration product to get the desired particle size (most of this is from the abstract of invention except for milling, which is disclosed in column 3, line 35 through column 4, line 36). Since Rothon is a polymer blend with magnesium hydroxide, it does not teach low viscosity dispersions at 40°C (Applicant's claim include viscosity limitations at 40°C). It does not seem obvious from Rothon how to get the small particle size, high surface area magnesium hydroxide of that disclosure into a low viscosity organic solvent media at 40°C at high concentrations without having some aggregation.

Magyar is used by the Examiner for teaching a surfactant with a HLB of 2 to about 16. Magyar is different from the other cited references because Magyar not only has water present but in the abstract defines the invention in the first line of the abstract of invention as an oil in water dispersion rather than a particulate in oil dispersion as the other references teach (and Applicant claims). In the title of Magyar, they describe the invention as a water in oil dispersion (which is more consistent with an HLB of 2-16) and which has some similarity to the other references. Surfactants with an HLB of 2 to 16 are notoriously used to create water in oil dispersions, while higher HLB surfactants are used to make oil in water dispersions. In any event, since Applicant's claims specify less than 2 wt.% water in the organic medium, there seems to be no reason (suggested by Magyar) to have a surfactant with an HLB of 2 to 16 combined with any of the prior art references to negate patentability of Applicant's claims.

Applicant suggests to the Examiner that under the 2007 KSR Guidelines and the 2010 KSR Guidelines of the USPTO, that in order to show obviousness the Examiner is

supposed to show appropriate findings of fact, a reasonable explanation of how the facts can/would be combined by one skilled in the art, and then a legal conclusion, whether the facts as combined make the invention obvious. In getting from the facts to the conclusion, the Examiner needs to show some reason for selecting specific elements from the various references for combining and why other specific elements shown in some references used are not combined with the elements that the Examiner has chosen to select to make the rejection and conclude obviousness. Applicant's attorney believes that he has shown in the above remarks that there are inconsistencies in the references used (i.e., they teach inconsistent ways to get to small particle dispersions). Many of the references use large amounts of water or water as the continuous media, and it seems illogical to use references with large amounts of water to negate patentability of claims with very limited amount of water. Applicant's attorney feels the Examiner needs to explain in the rejection why certain limitations were adopted from the conflicting references to make a combination equivalent to Applicant's claim. Those selections need some motivation (e.g. common sense combination, predictable results in the particular field, well known industry problem, etc.).

In particular, Applicant believes the Basic (GB 1,061,161) is the closest prior art and it teaches it is difficult to make dispersions for very similar purposes with particle sizes less than 2 microns even though solids contents in Applicant's range are possible. The only reference that teaches particle sizes less than 2 microns is Rothon that has a purpose of making dispersions in polymers for flame retardant properties. Rothon specifically teaches the need for water of hydration to create the surface area and ultimate small particle sizes he desires. Applicant teaches less than 2 % water. Similarly, Forsberg and Magyar teach a need for water in their dispersions. Richards teaches that its dispersions are in water (contradictory to Basic where the media is a polymer).

For that reason, it is submitted that the claimed invention is unobvious over Forsberg in view of, Rothon et al., Basic, and Magyar, and in as evidenced by Richards.

The Examiner is requested to withdraw the 35 U.S.C. §103(a) rejection over Forsberg in view of Rothon, Basic, Magyar, and Richards and find all claims allowable.

Conclusion

For the foregoing reasons, it is submitted that the present claims are in condition for allowance. The foregoing remarks are believed to be a full and complete response to the outstanding Office Action. Therefore, an early and favorable reconsideration is respectfully requested. If the Examiner believes that only minor issues remain to be resolved, a telephone call to the undersigned is suggested.

The Commissioner is authorized to charge the required fees for filing this response from The Lubrizol Corporation Deposit Account No. 12-2275.

Enclosures: Petition for three-month time extension
RCE request

Respectfully submitted,

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